

SHOULD CHOLECYSTITIS AND CHOLELITHIASIS
BE ANY LONGER CONSIDERED MEDICAL
AFFECTIONS, AND WHAT ARE THE USUAL
CONSEQUENCES OF SO TREATING THEM?*

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My attention was recently called to the views apparently held concerning cholecystitis and gall-stones by the rank and file of the profession, by a remark of my chief of clinic, "that the general profession at present seems to occupy the same position towards biliary surgery that it did ten years ago towards appendicitis." I am satisfied that this is largely true, and that the real importance of certain biliary conditions and the impossibility of successfully dealing with them otherwise than by the knife, is not widely enough recognized. The idea is certainly too prevalent in the profession that to warrant a diagnosis of cholecystitis some jaundice should be present, and that a painful, tender tumor in the region of the gall-bladder should be demonstrable with possibly chill, but certainly marked fever, while the failure to detect jaundice seems to many, unavowedly, to unsettle their tentative diagnosis as to the possibility of cholecystitis. If asked, point blank, whether uncomplicated inflammation of the gall-bladder could produce jaundice, the majority would answer correctly, no, but practically the absence of this symptom staggers them.

My first postulate is that cholecystitis is an infective process which precedes the formation of calculi, and that either with or without stone formation this disease of the gall-bladder implies certain potential dangers. It is true that the most common form of cholecystitis is produced by germs

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of low virulence, but what warrant exists for the belief that secondary infection with virulent organisms will not take place, causing infectious cholangitis—often a most fatal condition—or suppuration or gangrene of the gall-bladder with fatal peritonitis? What certainty is there that crippling adhesions involving the stomach and intestines will not form with persistent ill health, or even hopeless gastric dilatation? The absence of gall-stones at an operation in chronic cholecystitis does not prove that none have been passed or preclude the probability of their new formation. Let me illustrate my contentions by reading the notes of a few cases.

1. Mrs. F., age 76 years. A few days previous to entrance to the University of Michigan Hospital had chills followed by high fever and severe pain in the right hypochondriac region. She claimed never to have had any biliary trouble and believed this to be her first attack. Operation revealed a ruptured gall-bladder with old inflammatory trouble. Five days later a single, non-faceted stone was removed from the cavity formed among the adherent bowels.

2. Mr. G., age 72 years. Had never recognized pain or fever and had never vomited; very slight jaundice was present. Operation revealed suppurative cholecystitis with stones blocking the cystic duct.

3. Mrs. C., age 48 years. Vomiting, pain radiating to right shoulder, chills, fever and clay-colored stools were noted. Operation showed old adhesions around gall-bladder and common duct; no stones; cure followed loosening of adhesions and drainage.

4. Mrs. D., age 41 years. Severe jaundice, no vomiting, chills or fever, pain described as intestinal cramping, marked diarrhoea. At operation gall-bladder much distended, no stones. Cholecystitis with cholangitis causing jaundice.

5. Mr. X., age 47 years, rapidly developed after an attack of ptomaine poisoning gastric and hepatic pain, irregular attacks of chills, fever and sweating, acholic stools, intense jaundice, and rapid loss of flesh and strength. An obscure thickening in the region of the pancreas was detected. The family physician's

diagnosis was not concurred in of common duct stone, but infective cholangitis was believed to be present. His condition forbade operation.

Post-mortem.—General suppuration cholangitis was found with obstruction of the common duct from some undetermined condition of the pancreas. Early hepatic drainage would have saved this patient.

6. Mr. M., age 56 years, had gradually developed severe jaundice, commencing about seven weeks before admission to the hospital. Neither pain, vomiting, chills, clay-colored stools nor stones in the stools were noted. Operation showed gall-bladder containing a pint of bile, cystic duct kinked by weight; no stones, ante- or post-mortem, the patient dying from hemorrhage in thirty-six hours, having hematemesis, bloody stools and free bleeding from the gall-bladder. This case must have had long standing cholecystitis, judging from the conditions found.

Disease of the gall-bladder was present in all the cases quoted. No extended argument is needed beyond the histories of these patients to demonstrate that cholecystitis with or without stone may present few of the ordinary symptoms expected, that it may prove a menace to life when least suspected, and that the symptoms in some instances closely simulate those of common duct stone, while suppurative and gangrenous cholangitis is seen to be a most dangerous condition which may develop at any time from a chronic cholangitis.

Although the natural resistance of the hepatic and somatic tissues may prevent the most dangerous complications related, or even gain the victory so far as life is concerned, if the assistance of art is invoked, it must be admitted that these conditions of the gall-tracts can only be efficiently dealt with by proper operative intervention, and that early hepatic drainage will often prevent a lifetime of invalidism, or avert death. Moreover, the deteriorating effects of chronic jaundice, cholemia, and infection account for those unrestrainable capillary hemorrhages that not uncommonly destroy life after otherwise successful operations. Listen to these notes.

7. Mrs. P., age 50 years. Had been deeply jaundiced for many months past. The stools had been clay-colored since the commencement of the jaundice, except when tar-colored from altered blood. Patient had frequent epistaxis, and there were areas of subcutaneous hemorrhage. At operation one stone was removed from the common duct and one from the gall-bladder. Death resulted from steady capillary hemorrhage in thirty-six hours.

8. Mrs. C., age 28 years. Had had attacks of pain for the past seven weeks, located in the liver region, but radiating to the epigastrium. Slight jaundice with repeated chills and fever were noted. Numerous old adhesions were found at operation; the pancreas was two or three times its normal volume. A single loose stone was found in the gall-bladder. On the third day the drainage from the gall-bladder was largely blood and quantities of it soaked the dressings. The hemoglobin and number of red cells rapidly diminished, every evidence of severe loss of blood with profound shock being present. After the seventh day the hemorrhage ceased and the patient recovered; here the presence of old adhesions proved that chronic cholecystitis had been overlooked, and that the nearly fatal hemorrhage resulting from the acute jaundice due to cholangitis could have been averted by timely hepatic drainage.

9. Mrs. B., age 55 years. Severe jaundice of long standing was present. No chills, fever or pain. At operation, malignant disease encircling the common duct with liver secondaries was found. Severe hemorrhage took place from the wound on the second day, but this finally ceased and the patient recovered.

Case 6, as you recall, also died after profuse bleeding. Are not these cases adequate proof of the dangers of hemorrhage after chronic cholemia and jaundice?

The tendency to serious capillary hemorrhage usually occurs only in cases of pronounced and prolonged jaundice and cholemia, but an undetected, mild grade of cholemia preceding a comparatively short and slight jaundice may provide the necessary conditions, as exemplified by Case 8.

The constant presence of bile salts in the blood vessels leads to such destruction of the red cells that an improv-

erished, imperfectly elaborated pabulum is supplied to the minute vessels, while at the same time these salts attack and compromise the integrity of their intimal coat, of which, indeed the capillaries are alone formed.

An answer to the question "what causes jaundice in hepatic ailments" will clarify our ideas. Obstruction of the common duct will compel back pressure and resorption. Adhesions; pressure from without by a tumor; or inflammation of the pancreas; distortion or narrowing of the duct orifice by traction on the duodenum (as is sometimes caused by a loose kidney) can produce choledoch obstructive jaundice as well as a calculus. Infective cholangitis causes obstruction of the intra-hepatic ducts from swelling of their lining membrane, interfering with or arresting the exit of bile, thus favoring its resorption. When the jaundice is not due to common duct obstruction it can only be produced in this way, if we except a hematogenous origin. Thus the presence or absence of jaundice in cholecystitis, cystic duct kinks or obstruction of this by adhesions, gall-stones or cystic duct stones is explicable, as well as the absence or presence of acholic stools, because the jaundice is due to a complicating cholangitis, and not directly to any of the conditions mentioned. Again, the illusory improvement occasionally seen in carcinoma of the liver, from lessening or disappearance of the jaundice, simply means a lessening or complete subsidence of the swelling of the intra-hepatic duct linings, not to a change in the carcinomatous disease.

A rather blind acceptance of the group of symptoms supposed to indicate the presence and passage of gall-stones is too prevalent in the profession, viz., pain starting in the right hypochondrium radiating to the back and preferably to the right shoulder; violent vomiting; a sudden cessation of the pain; jaundice; clay-colored stools; and calculi to be found in the stools, if careful enough search is made. Again, many practitioners, having seen chills, fever and sweating with marked jaundice and acholic stools in some cases of common duct obstruction expect to find it in all such cases,

and are also surprised when no common duct obstruction is found after such symptoms. Still further, jaundice means with many as a complement, acholic stools, and when the latter are absent, doubt arises as to any gall tract disease being present.

A moment's reflection upon certain anatomical facts should modify any such views. Why should there be jaundice even if the cystic duct is blocked by a stone, if the common duct is patent? There is no reason, unless cholangitis be present, which in a certain number of cases of cholecystitis and cholelithiasis does obtain, because organisms of more than usual virulence are being excreted with the bile and set up inflammation in the intra-hepatic ducts.

Why should gall-bladder disease be accompanied by chills followed by fever and sweats, unless suppurative or gangrenous cholecystitis is present? Certainly no reason exists. Excluding these two conditions why should aguish attacks and acholic stools be viewed as produced only by an occluding choledoch stone, instead of being mere evidences of common duct obstruction by adhesions, tumor pressure, kinking from over-distension of the gall-bladder, or enlargement or disease of the pancreas. Fever, chills, and sweats occur because the lymphatic and vascular arrangement of the common duct favors a rapid absorption of infective products; while, if the cystic duct be blocked, absorption is slow and difficult on account of the scanty lymphatic network of the gall-bladder.

As instances of the uncertainty of the significance of jaundice other than as a symptom of cholangitis, and because these cases present other features of interest, let me run over abstracts of the histories of a score or more of cases, asking you to bear in mind the points emphasized in the cases previously mentioned.

10. Female, age 47 years.—Had typhoid fever when a child. Vomits during attacks; pain in right hypochondrium which extends up to the right shoulder; slight jaundice present;

no chills or fever; stools normal; no stones detected in stools; calculi found in gall-bladder.

11. Woman, age 47 years. Had typhoid fever as a child; vomiting during attacks following sharp pain in epigastrium; no jaundice; stools normal; no stones were found; calculus in cystic duct.

12. Man, age 46 years. Had typhoid fever ten years previous to commencement of present trouble which is of a number of years duration. Vomiting lasts from one to twelve hours in each attack; pain referred to epigastrium; continuous jaundice for the past three months; stools negative; calculi in gall-bladder.

13. Man age 57 years. Had typhoid fever five years before onset of present trouble. Localized pain; jaundice; acholic stools. Common duct obstructed by enlarged pancreas.

14. Man, age 45 years. Had typhoid fever some years ago during which he had jaundice; vomiting during attacks with pain radiating upwards from the right hypochondrium; has had frequent attacks of jaundice and his stools are frequently acholic; occasional blood in stools and vomitus; calculus in common duct.

15. Man, age 62 years. Severe vomiting during attacks; pain over liver extending to epigastrium; marked jaundice; stools negative, according to patient; occasional chills, fever and sweat; calculi in both gall-bladder and common duct.

16. Man, age 45 years. Had history of typhoid fever preceding the gall-stone trouble. During the course of the enteric fever he was jaundiced and has been much of the time since then. The stools are clay-colored; blood is sometimes seen in the stools, and in the vomitus; vomiting with the exacerbations of pain over the liver radiating upwards; stone in common duct.

17. Woman, age 55 years. Has had no vomiting, jaundice or acholic stools; neither chills nor fever; stools negative. At operation gall-bladder contained many small stones.

18. Woman, age 39 years. Vomiting absent; markedly jaundiced; pain over liver radiating upwards; 184 gall-stones in gall-bladder.

19. Woman, age 33 years. Occasional jaundice; stools negative; pain over liver radiating upwards into right chest; solitary stone in gall-bladder.

20. Woman, age 51 years. Vomiting was present with chills and fever; stools negative; calculi in gall-bladder.

21. Mrs. C., age 47 years. Occasional vomiting with slight jaundice noted; stools negative; pain over liver region radiating into epigastrium and up beneath the sternum; neither fever nor chills; stone in common duct.

22. Woman, age 50 years. Vomiting; jaundice; acholic stools containing gall-stones; hepatic pain; neither chills nor fever; numerous calculi in gall-bladder; a sinus persisted and a subsequent exploration revealed carcinoma of the gall-bladder, but no calculi.

23. Woman, age 66 years. Occasional vomiting, with slight jaundice during attacks; chills and fever; acholic stools; stone removed from common duct.

24. Woman, age 34 years. Severe jaundice; chills with fever and acholic stools were noted; pain was located in lower part of the abdomen; gall-bladder filled with stones; persistent fistula. Returned two years later. Stone found in common duct. This patient died one year later, probably from malignant disease.

25. Man, age 56 years. Early and severe jaundice developed with repeated attacks of chills, fever and vomiting, acholic stools and calculi in the dejecta, the pain commencing in the appendix region, thence passing up to the liver. Very numerous adhesions with small stone in the gall-bladder.

26. Woman, age 30 years. Vomiting; jaundice; chills and fever; acholic stools with pain in right side extending up into right shoulder; many calculi in gall-bladder; pelvic abscess formed and was operated; parotid abscess also developed; recovery.

27. Man, age 48 years. Vomiting; jaundice; pain over liver; normal stools; gall-bladder much dilated and diseased; no stones anywhere; mass in the head of the pancreas.

28. Woman, age 30 years. Patient operated on elsewhere two years previously for gall-stones, but eight months later recovered twenty calculi from the stools. She had had neither jaundice, acholic stools nor aguish attacks. She had daily attacks of colicky pain in the right side, but at operation nothing but extensive adhesions were found, especially between the small intestines and gall-bladder.

29. Woman, age 62 years. No jaundice or acholic stools; pain felt in right side; stone in gall-bladder.

30. Woman, age 47 years. Has had neither vomiting nor jaundice; pain radiated from liver to the left side; calculi in gall-bladder.

31. Woman, age 53 years. Jaundice, vomiting, acholic stools, chills and fever all present, with pain in right side. Stones only in gall-bladder, not in common duct.

32. Woman, age 55 years. Directly following convalescence from typhoid fever somewhat over two years before admission to the hospital, the patient had repeated attacks of severe pain radiating to the centre of the epigastrium with jaundice; neither vomiting nor acholic stools were present; stones in gall-bladder.

33. Woman, age 48 years. Typhoid fever one year before the onset of the gall-bladder trouble; vomiting, marked jaundice, chills and fever; stools negative; gall-bladder filled with stones.

34. Man. Vomiting, slight jaundice, epigastric pain, chills and fever; stones only in gall-bladder and cystic duct.

35. Man. Slight jaundice; vomiting only in first attack; pain over liver extending to the left thigh and also upward; stones in gall-bladder.

36. Woman. Slight jaundice; severe vomiting; pain in right side shooting upwards; calculi in gall-bladder and cystic duct.

37. Woman, age 48 years. Doubtful history of jaundice; movable kidney; operation for fixation of same revealed through the peritoneum a goodly sized fluctuating swelling at and in front of the lower pole of the kidney, closely simulating a distended renal pelvis. Opening the peritoneum, a much dilated gall-bladder was found closely connected with the kidney and filled with stones.

38. Man, age 43 years. Slight vomiting and jaundice with normal colored stools containing numerous calculi. Attacks of severe pain were experienced radiating upwards. A rapidly increasing infiltrating tumor was found on the right side involving the abdominal parietes. At operation an ovoidal segment of the abdominal wall was excised to gain safe access to the cavity. Enormous mass of adhesions involving all the neighboring parts. One large imbedded calculus was removed with innumerable

minute ones scattered among the adhesions. By microscope no malignancy.

39. Man. Obstructive jaundice due to stones which had ulcerated into the stomach and had been vomited before operation, while others were found in this viscus post-mortem. Enormous dilatation of the stomach existed for which a gastro-enterostomy was done.

40. Woman, age about 50 years. Came to me with a correct diagnosis of enlarged stomach due to gastric ulcer, or possibly malignant disease, owing to the detection of a resisting mass in the right hypochondrium. There was an obscure history of what might have been gall-bladder trouble. Operation showed a pylorus and duodenum almost occluded by the adhesions, and an enlarged gall-bladder crammed with stones. Owing to the feebleness of the patient and the primary demand for relief of the pyloric stenosis only a gastroenterostomy was done.

41. Man, age 65 years. Showed symptoms of intestinal obstruction for only forty-eight hours before operation. Operation by a colleague showed that the obstruction was due to a biliary calculus two inches in diameter. He was never supposed to have had biliary disease but had had "stomach trouble" for some undetermined period before this fatal illness.

42. Woman, age 47 years. She absolutely denied, after repeated questioning, that she had had any form of illness before the attack initiating her present illness. She was a cultured woman and denied jaundice, abnormal stools, pain or discomfort, until about one year previous to the time when she came under my care, when an abscess rapidly formed one inch to the left of the umbilicus which had been opened by her attendant, evacuating plain pus. The resultant sinus suggested a small fecal fistula due to ulceration of the bowel in a possible umbilical hernia, but nothing except pus was ever detected. Operation showed a sinus tract extending upwards for about three inches, directed towards the gall-bladder, in which were found a number of biliary calculi. No evidences of bile were found during the operation or the course of her rapid convalescence.

43. Man, age 45 years. Had passed gall-stones on several occasions after attacks of biliary colic, but still had repeated attacks of pain, vomiting, etc. Operation showed that his last attacks could not have been due to the passage of gall-stones,

because the cystic duct was obliterated. Among the dense mass of adhesions a medium sized calculus was found firmly grasped by a shrunken gall-bladder which contained no bile. The gall-stones, which had been previously evacuated in the stools, had evidently ulcerated into the colon, as shown by the conditions found at the operation.

44. Woman, age 47 years. Twenty-nine years ago had severe pain in the right side, in hepatic region, lasting two hours, which radiated to the region of the stomach and into the back. Patient had had similar attacks ever since at intervals of six months; sometimes these attacks will recur daily. Was entirely free for a period of five years. Has never been jaundiced. Stools normal. Never vomited. At operation the fundus was found to be thickened and was removed with a large portion of the gall-bladder, after extracting numerous stones. Pathological report carcinoma.

In the notes of the cases mentioned, one must be struck by the absence of many symptoms usually deemed to be almost universally present in the classes of cases described. Roughly analyzing the symptoms presented by these, with those noted in other cases taken at random from old hospital and private records I have found the following statements warranted. As was to be expected from the probability of infection attacking the smaller bile ducts, because of the passage through them of infected bile at some time during the numerous recurrences of the trouble, jaundice was present in seventy-five per cent. of the cases, but in about one-third of these no calculi existed anywhere in the biliary apparatus. In about one-third the jaundice was practically continuous, but of this one-third more than half were not cases of biliary lithiasis. The evidence of the actual presence of jaundice in a certain number of cases was doubtful, resting solely on the alleged yellow staining of the conjunctiva, which was in some cases declared to be still present by the medical attendant when it was patently absent to my own eyes, and no biliary constituents could be detected in the urine. In this connection too much emphasis cannot be laid

upon the fact that a gall-bladder crammed with stones, provided catarrhal or infective cholangitis does not occur, need never throughout the lifetime of a patient give rise to the slightest jaundice, hence the absence of this symptom does not exclude the presence of gall-stones, etc.

In about one-sixth of the cases vomiting occurred during the majority of the attacks, while in one-third of the cases studied emesis was only occasional, in some being only present during the first attack.

The number of cases whose notes were sufficiently full to draw any definite conclusions from are too small to lay any great stress upon the percentages given, but they do serve to show the actual happenings in the practice of one surgeon during a given period.

Acholic stools were determined in a little more than one-fourth of the cases, and only in one-eighth of these acholic cases were calculi ever detected in the stools.

Chills, fever and sweats occurred in almost one-third of the cases, while in the remaining two-thirds these symptoms were positively excluded, or had not been recognized by the patient as pronounced enough to be recalled.

Less than half of those suffering from these aguish paroxysms (so commonly thought to be due to common duct stone) had calculi so located, or even duct obstruction from other causes. No attempt is here made to discredit the value of these symptoms as usually indicative of choledoch obstruction, most often from stone, but numerous cases in my practice illustrate the undoubted fact that these symptoms are merely evidences of an infectious process so located that its products can be readily absorbed, so that severe cholecystitis or gangrene of the gall-bladder with cholangitis may provide the necessary amount of toxic substances and also the jaundice and acholic stools.

The location of the pain experienced during an attack of gall-stone colic is an interesting study. While this point has not been rigorously determined in all the cases upon which this paper is founded, you will recall that in the notes

of a number of those read the pain has been located as follows; over the liver; over the liver and epigastric region; over the liver and abdomen; the appendix region; the right hypochondrium; on the opposite side of the abdomen; on the right side; on the right side not passing beyond the median line; extending from the hepatic region down into the right thigh as well as somewhat upwards; in the epigastrium alone; over the right side and extending upwards; while in only a few cases did the patient describe the pain as commencing in the hepatic region and extending up to the right shoulder, or back of the neck, hence, the absence of the "characteristic pain" believed in by the laity and by many of the profession is of little moment.

Again, an interesting query arises in connection with the uncertain location and character of the pain. What then is hepatic colic? Is it always due to the passage of a calculus? This question is sometimes difficult to determine. In a considerable proportion of these cases, frequent, even daily attacks of pain, perhaps attended with colic were experienced, where no stones were present, or where stones were absolutely fixed by the contracted gall-bladder walls and dense adhesions. Sometimes these attacks were what might be called atypical, but I am convinced from my whole experience that during an attack of biliary colic, it is vastly more likely that a stone does not pass than that one does. Distension of the gall-bladder or common duct from temporary obstruction due to kinking, or ball-valve action of a calculus; slight adhesions or strictures of the ducts; the passage of a small aggregation of cholesteroline crystals or biliary sand; all these inducing spasms of the muscular coats of the bladder or ducts; slight attacks of localized peritonitis; gastric tenesmus induced by adhesions; intestinal colic from the same causes; distension of the stomach because of spasmodic pyloric obstruction alone, or this with actual dilatation of the stomach; exacerbations of the ulcerating process in the colon, duodenum, or stomach, whereby large stones are often evacuated from the gall-

bladder; all are conditions that are frequently called attacks of gall-bladder colic in addition to the actual expulsion from the gall-bladder, hepatic or common ducts of a calculus. One of two recent cases of supposed gall-bladder disease experienced frequent attacks of what were considered to be typical biliary colic due to the passage of stones, the attacks sometimes recurring daily from considerable periods, the pain being located in the right hypochondrium and the vomiting being both violent and prolonged. Abdominal section revealed a partial intestinal obstruction produced by a dense band of omentum passing from the hepatic flexure of the colon to the abdominal wall, in its passage downwards being firmly adherent to and constricting the ascending colon. Enormous dilatation of the caput coli and appendix had resulted. The second case on admission had fever, leucocytosis and a painful tumor somewhat above McBurney's point, but there was tympany between its upper border and the liver, yet upon the strength of an alleged slight jaundice, with severe vomiting early in the attack, commencing as soon as the pain became pronounced, the condition was viewed by some of my assistants as one of cholecystitis with calculi. I operated for appendicitis and found nothing but this.

A point of great etiological interest is the fact that seven at least of these patients, perhaps more, had had very recently, or antedating their biliary trouble by a greater interval, typhoid fever. All know that the gall-bladder is not infrequently inflamed in this disease, and also that typhoid bacilli have been cultivated from the gall-bladder of patients who have had enteric fever many years before—in one instance seventeen years, in another twenty years had elapsed. Moreover, non-viable typhoid bacilli are not uncommonly found in the substance of gall-stones.

I shall now ask certain questions warranted by the facts given in the cases cited and confirmed by many others not mentioned. Why should pain be always felt which radiates to the epigastrium, to the right shoulder, or indeed in any special direction, when operation reveals in many instances

that owing to adhesions and perhaps serious ulceration from the pressure of gall-stones, the sources of pain are really not in the biliary apparatus at all, but in the subhepatic and pyloric regions?

Vomiting is in proportion to the pain, the amount of irritation of the splanchnic system, and the consequent vasomotor paresis resembling shock, and to individual idiosyncrasy; why then need this be in any way indicative of anything except the severity of the pain?

If the pain must stop suddenly, and this is a proof of the passage of a calculus, why are certain facts easily demonstrable, viz., that in the majority of attacks of so-called biliary colic, the pain subsides rather slowly, no stones are found in the stools, even temporary obstruction of the common duct cannot be demonstrated, and at operation it is often patent that none of the stones, or the stone present, could have even commenced to enter the cystic or common duct?

It must then be clear that to demand the so-called "characteristic pain," the vomiting, the jaundice, the clay-colored stools, the sudden cessation of the pain and the recovery of the stones from the stools, is unreasonable, and resembles the demand for high fever, sweats, generalized abdominal distension, obstinate constipation, marked vomiting, pain and tumor in a definite locality, and inability to extend the right thigh, which a decade ago many practitioners seemed to think must all be readily detectable, before a diagnosis of appendicitis should be made.

Dangerous Sequelae. I have, when reading the notes of cases, or formulating the statements founded on them, called attention to the dangers of cholecystitis and cholangeitis, but for the purposes of emphasis I desire to restate them, premising however, that the probabilities of each complication can neither be stated in figures, nor foreseen in any given case.

Chronic inflammation of the gall-bladder precedes and predisposes to the formation or reformation of gall-stones, with all their dangers. Adhesions to the duodenum, stomach

and colon are common. Compression and obstruction of the common duct may by adhesions lead to chronic cholemia and infective cholangitis. Gastric adhesions originated by cholecystitis and its sequelæ more often produce so-called stomach disease and serious dilatation of this organ than is commonly believed. Should virulent infective organisms reach the chronically diseased gall-bladder, acute suppuration with rupture, or even gangrene, may result with all its possible sequences. Carcinoma of the gall-bladder is not an uncommon sequence of cholelithiasis. See cases 22, 24, 44. These direful results have nearly all been exemplified in the histories of my cases.

Once gall-stones are formed, all the dangers attending cholangitis are present, with the greater risks of suppuration, rupture, gangrene, stomachic and intestinal crippling, and ulceration involving the stomach or colon, with all its dangers; dilatation of the stomach; carcinoma; intestinal obstruction from a large stone, perhaps increased in bulk by calcareous intestinal accretions; and fatal hemorrhage, even without operation.¹ A greater refinement in analysis might perchance reveal some other obscure dangers, but what has been already said really embraces all of importance.

Diagnosis.—When temporary obstruction of the common duct has occurred on more than one occasion with jaundice, pain—characteristic (?) or not—the stools being acholic, aguish paroxysms having been noted with sudden cessation of pain, rapid clearing up of symptoms, and the recovery of calculi from the stools, he who runs may read, but with the irregular symptoms which many cases present the matter is not so easy. A diagnosis can best be made by exclusion. Stomach and duodenal ulcer, gastric carcinoma, neoplastic obstruction of the bowels, acute or chronic pancreatic disease, intestinal obstruction by bands, dilated stomach, renal calculi or disease, a dislocated kidney which is sometimes accompanied with jaundice, appendicitis, the gastric crises

¹ More than one such case has occurred recently at the University Hospital.

of locomotor ataxia, and spinal caries must all be considered, while examination of the urine often gives valuable information by revealing the unsuspected presence of biliary substances when jaundice has passed away or is too slight for a certain opinion. The association of appendicitis and cholecystitis must not be overlooked. Without going into the differential diagnosis of the affections mentioned, you will readily understand that during these investigations, it is hardly possible not to recognize such conditions as will lead you to investigate the biliary apparatus so rigidly as to arrive at correct conclusions in the absence of all supposedly pathognomonic symptoms. Again, despite all care, doubt may still exist between gastric and duodenal ulcer, disease of the pancreas, and appendicitis, or even a neoplasm. In such cases, because an operation can alone afford relief for any of these conditions, and when one incision will enable the surgeon to deal with any or all of these ailments, if present, an exploration should be made.

In conclusion let me again urge, that this paper simply represents the average conditions presented by cases, gathered at random, not that another series in my own practice would necessarily present exactly similar complications or symptoms.

My object will have been secured, if I shall have induced some of my readers to recognize the existence of many serious hepatic and biliary conditions, which can only be properly met by use of the knife. If these conditions must be recognized early to secure the best results, a diagnosis must be often reached by discarding the group of symptoms usually relied upon, and reaching correct conclusions by a careful analysis of the symptoms, viewed in the light of anatomy, physiology and modern pathology. In certain rare cases, as already said, only an exploration will decide the question.